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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2004/032842 A3

(54) Title: MOLECULAR SUB-CLASSIFICATION OF KIDNEY TUMORS AND THE DISCOVERY OF NEW DIAGNOSTIC MARKERS

(57) Abstract: Genes that are differentially expressed in subtypes of renal cell carcinomas are disclosed as are their polypeptide products. This information is utilized to produce nucleic acid and antibody probes and sets of such probes that are specific for these genes and their products. Methods employing these probes, including hybridization and immunological methods, are used to determine the subtype of a renal cell tumor sample from a subject based on the differential expression of such genes that is characteristic of the cancer subtype.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/31476

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12Q 1/68; C07H 21/04; G01N 33/536, 33/543, 33/566  
 US CL : 435/6; 536/24.31; 436/501, 518, 536

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
 U.S. : 435/6; 536/24.31; 436/501, 518, 536

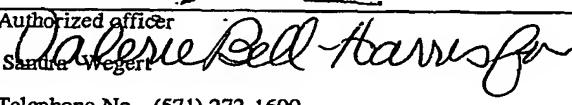
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
 Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GITAN, R.S., Methylation-Specific Oligonucleotide Microarray: A New Potential for High-Throughput Methylation Analysis. Genome Res. December 2001, Vol 12. pages 158-164, whole document.	1-28

<input type="checkbox"/>	Further documents are listed in the continuation of Box C.	<input type="checkbox"/>	See patent family annex.
*	Special categories of cited documents:		
"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"B"	earlier application or patent published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 22 July 2004 (22.07.2004)	Date of mailing of the international search report 10 AUG 2004
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 872-9306	Authorized officer Sandra Weger  Telephone No. (571) 272-1600

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US03/31476

**Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)**

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claim Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claim Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claim Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

PCT/US03/31476

**Continuation of B. FIELDS SEARCHED Item 3:**

Databases: Medline, Biosis, Lifesci, USPAT, EPO, Derwent. Search Terms: renal, carcinoma, clear cell, papillary, chromophob\*, oncocytoma, sarcomatoid, Wilms, sapiens, human, tumor, array, microarray, phosphorylation, oligonucleotide, detection, and combinations. STIC search SEQ ID NO: 1-6, 8, 9 and interference. Inventors, PALM, EAST: Teh, B. T., Takahashi, M.